

sensor unit a multi-channel evaluation of the optical signals is performed.

REMARKS

The following remarks will address the issues of the Office Action of December 13, 2001 in the order in which they were stated by the Examiner.

In response to item 1 of the Office Action, a proposed correction of Fig. 1b is submitted with the attached Drawing Change Authorization Request.

In response to item 2, additional Figures 1c, d and e are submitted with the attached Drawing Change Authorization Request, to show the features as noted by the Examiner, which are recited in the claims as well as disclosed in the specification but not illustrated in the drawings. No new matter is thereby introduced. The specification has been amended to include appropriate references to the new drawing figures.

Claims 2 and 4-15 are pending in the application, claims 1 and 3 having been cancelled without prejudice by the present amendment.

Claims 1-11 and 13-15 stand rejected under 35 USC § 112, second paragraph, as being indefinite. The Examiner found that "a group" was recited in line 1 of claim 1 without stating what elements the group was made up of. In the present

amendment, claim 10 (amended) incorporates all of the limitations of the now cancelled claim 1. The phrase "a carrier having at least one code track of a group" has been amended to "a carrier having a first group of code markings disposed in at least one code track," which more clearly describes the claimed invention. The amended phrase is consistent with the specification, e.g., page 1, lines 5 and 6. No new matter is introduced by this amendment. Withdrawal of the objection is respectfully requested.

Claims 1-8, 12 and 15 stand rejected under 35 U.S.C. 102(a) as being anticipated by Jankowski (DE 198 05 207 A1). The rejection is based on the Examiner's reading of claims 1-8, 12 and 15 of the present application on Figures 1-4 of the Jankowski reference. Applicant respectfully submits that claim 10 (amended), which replaces claim 1 as the base claim, is distinguished from Jankowski at least by the limitation that the code markings of the at least one higher-order group are distributed over the code track with an arbitrary spacing and are forming segments on the timing disk or the timing ruler for controlling different functions. Claim 12 has been amended to incorporate the same limitations as claim 10 (amended). Consequently, the independent claims 10 and 12 (amended) and dependent claims 2, 4-8 and 15 can no longer be said to be anticipated by Jankowski, and the foregoing rejection under 35 U.S.C. 102(a) based on anticipation by Jankowski (DE 198 05 207 A1) should therefore be withdrawn.

Claim 9 stands rejected under 35 U.S.C. 103(a) as being unpatentable over

Jankowski as applied to claim 8 above, and further in view of Omi (U.S. Patent 5,841,133). The Examiner found that Omi discloses a reflecting material.

Claim 13 and 14 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Jankowski as applied to claim 12 above. The Examiner found that light emitting diodes and phototransistors are considered conventional in timing devices and it would have been obvious for a skilled-in-the-art person to use them with the Jankowski device.

Applicant submits that with independent base claim 10 (as amended herein) presumably being allowable, dependent claims 9 (amended) as well as 13 and 14 should likewise become allowable, and the foregoing rejection of claims 9, 13 and 14 as being unpatentable under 35 U.S.C. 103(a) should therefore be withdrawn.

Under item 7 of the Official Action, the Examiner indicated that claims 10 and 11 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph and to include all of the limitations of the base claim and any intervening claims. While applicant appreciates this favorable finding by the Examiner, it was felt that a rewritten claim 10 with all of the limitations of claims 1-9 would have been narrower than is necessary to overcome the rejections under 35 U.S.C. 102(a) and 103(a). Having included the limitations of claims 1 and 3 in the rewritten claim 10, applicant respectfully submits that the rejections under 35 U.S.C. 102(a) and 103(a) in

the Office Action of December 13 are appropriately addressed and that claim 10 (amended) as well as dependent claim 11 (amended) should therefore be allowed even without including every single limitation of claims 1-9 in the rewritten claim 10.

Each and every point in the Office Action dated December 13, 2001 has been addressed on the basis of the above amendment and remarks. Allowance of the present application with all of the pending claims 2 and 4-15 is earnestly solicited.

Respectfully submitted,



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Attached: Marked-up Version of Amendments
 Drawing Change Authorization Request
 Petition for one-month extension



**ATTACHMENT: MARKED-UP VERSION PURSUANT TO 37 C.F.R. § 1.121
FOR AMENDMENT OF APRIL 2, 2002**

SPECIFICATION:

Page 5, the last paragraph beginning with "Arbitrary intermediate steps...":

Arbitrary intermediate steps can be encoded by a suitable gradation of the gray levels. In the example of Fig. 1e, such arbitrary steps are demarcated by segments s1, s3, s5 of black bars alternating with segments s2, s4, ... of gray bars. The segments defined in this manner can be used to control different functions. [In this way, certain segments of a timing disk or a timing ruler can be defined that are associated with additional functions.]

CLAIMS:

1 2. (Amended) The timing device according to claim 10 [1], wherein the at
2 least one sensor unit for scanning the first group and [additional] the at least one
3 higher-order group [groups] of code markings [are scanned by the same] consists of a
4 single sensor-emitter-unit.

1 4. (Amended) The timing device according to claim 10 [3], wherein the
2 sensor unit comprises a light source and a light sensitive sensing device.

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1 5. (Amended) The timing device according to claim 10 [4], wherein in the
2 sensor unit a two-channel evaluation of the optical signals is performed.

3 6. (Twice amended) The timing device according to claim 10 [5], wherein
4 the first group of code markings has a predetermined optical density and the [additional
5 groups] at least one higher-order group of code markings has an optical density
6 [densities] different from that of the first group, with the groups of code markings having
7 a detectable grading of optical density levels for generating control or position signals.

1 7. (Amended) The timing device according to claim 6, wherein the groups of
2 code markings have a predefined difference [in] between their optical density levels.

1 8. (Amended) The timing device according to claim 7, wherein the optical
2 density levels correspond [corresponds] to different gray levels which can span a range
3 between light-blocking and almost complete transparency.

1 9. (Amended) The timing device according to claim 8, wherein the carrier of
2 the timing device is made of a reflecting material and the groups of code markings have
3 [a] different degrees [degree] of reflectivity.

1 10. (Amended) [The timing device according to claims 9] A timing device
2 comprising a carrier having a first group of code markings and at least one higher-order

3 group of code markings disposed in at least one code track, said first and at least one
4 higher-order group of code markings being scanned by at least one sensor unit to
5 produce signals, wherein the at least one code track has a different optical density
6 compared to the first group, wherein the code markings of the at least one higher-order
7 group overlap with the code markings of the first group in the at least one code track,
8 wherein the code markings of the first group have a mutually constant spacing from one
9 another, whereas the code markings of the at least one higher-order [a second and
10 subsequent] group are distributed over the code track with an arbitrary spacing and are
11 forming segments on the timing device [disk or the timing ruler] for controlling different
12 functions.

1 11. (Amended) The timing device of claim 10, wherein [the code markings
2 of the second and subsequent group are used for] said different functions include at
3 least one of the functions of controlling [one of] a start position, controlling [and] an end
4 position, [for one of calibration purposes and for absolute positioning] calibrating the
5 timing device, and determining an absolute position of the timing device.

1 12. (Amended) A positioning device, comprising a timing device with a
2 carrier having a first group of code markings and at least one higher-order group of
3 code markings disposed in at least one code track, with the code markings being
4 scanned by at least one sensor unit for producing a signal, wherein the at least one
5 code track has a different optical density compared to the first group, wherein the code

6 markings of the at least one higher-order group overlap with the code markings of the
7 first group in the at least one code track, wherein the code markings of the first group
8 are spaced at constant intervals from one another, whereas the code markings of the at
9 least one higher-order group are distributed over the code track with an arbitrary
10 spacing and are forming segments on the timing disk or the timing ruler for controlling
11 different functions, and wherein the code markings of the at least one higher-order
12 group are used for at least one of the purposes of controlling a start position, controlling
13 an end position, calibrating the timing device, and determining an absolute position of
14 the timing device; said positioning device further [and] comprising a signal processing
15 device that[, the signal processing device] converts the sensor signal into a control
16 signal and is connected after the sensor unit.

1 15. (Amended) The timing device according to claim 10 [5], wherein in the
2 sensor unit [performs] a multi--channel evaluation of the optical signals is performed.

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